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EXAMINER

MORRISON, THOMAS A

ART UNIT

PAPER NUMBER

3653

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/649,728	Applicant(s) LEE ET AL.	
	Examiner Thomas A. Morrison	Art Unit 3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
4a) Of the above claim(s) 11,24-26 and 34 is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9,12-19,27-33 and 35-37 is/are rejected.
- 7) ☒ Claim(s) 10 and 20-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The indicated allowability of claim 3 is withdrawn. The examiner failed to fully appreciate the disclosure of Japanese Publication No. 57-27838. Rejections based on this reference follow.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/19/2006 and applicant's submission filed on 02/28/2006 have both been entered.

Claim Objections

3. Claim 4 is objected to because of the following informalities: (a) the recited "a driving source connected the second end" should be -- a driving source connected to the second end --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-6, 8, 30-33 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high strength" in claim 2 is a relative term which renders the claim indefinite. The term "high strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "low strength" in claim 2 is a relative term which renders the claim indefinite. The term "low strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 4, it is unclear how the **first end** of each of the first link members is linked with **both sides** of the rotary member. How can a first end be linked with two sides (i.e., both sides) of a rotary member.

The term "high strength" in claim 8 is a relative term which renders the claim indefinite. The term "high strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "low strength" in claim 8 is a relative term which renders the claim indefinite. The term "low strength" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In claim 17, it is unclear what is meant by the recited "thick paper" and "thin paper".

The term "thick paper" in claim 30 is a relative term which renders the claim indefinite. The term "thick paper" is not defined by the claim, the specification does not

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provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term "thin paper" in claim 30 is a relative term which renders the claim indefinite. The term "thin paper" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 7, 12-16, 18-19, 27-29 and 36, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,382,619 (Gustafson et al.).

Regarding claim 1, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including

a paper feeding cassette (24) including a plurality of sheets of paper arranged in a stack, the paper feeding cassette (24) having a friction resistance plate (34), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the paper sheets one by one;

a pick-up roller (58) to rotate in contact with a topmost sheet of paper of the paper feeding cassette (24) to convey the topmost paper toward the friction resistance plate (34);

a pick-up bracket (38) to rotationally support the pick-up roller (58), and having a gear train (including 54a-d) to transmit a rotational driving force to the pick-up roller (58); and

a pick-up position varying unit (72) to move the pick-up roller (58) to one position among at least two pick-up positions, wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper. As one example, sheet thicknesses of each sheet in the stack of sheets are characteristics of the sheets of paper. Each time the pick-up position varying unit (72) moves the pickup roller (58) downward, one sheet is picked up by the pickup roller (58). The pickup roller (58) will move to a first pickup position to pickup the topmost sheet of the stack. This first pickup position is preset, based upon the sum of thicknesses of the sheets up to the top surface of the uppermost sheet in the stack. At some point, the pickup roller (58) will be moved upward. When the next sheet in the stack is to be fed, the pickup roller (58) will be moved downward to a second pickup position that is lower than the first pickup position, e.g., lower by the thickness of the previously fed sheet. In other words, this second pickup position is also preset in accordance with the sum of thicknesses of sheets remaining in the stack. As such, the Gustafson et al. apparatus has first and second pickup positions that are pre-set in accordance with characteristics of the sheets of paper.

Regarding claim 7, Figs. 1-4 show a paper pick-up device of an image forming apparatus, having a paper feeding cassette (24) including a plurality of sheets of paper, the paper feeding cassette (24) having a friction resistance plate (34), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the sheets of paper one by one;

a pick-up roller (58) to rotate in contact with a topmost paper of the paper feeding cassette (24) to convey the topmost paper toward the friction resistance plate (34);

a pick-up frame (near 92) disposed in the paper feeding cassette (24);

a pick-up bracket (38) movably disposed in the pick-up frame (near 92), on an end of which the pick-up roller (58) is rotatably disposed, and inside of which a gear train (including 54a-d) is provided to transmit a rotational driving force to the pick-up roller (58); and

a pick-up position varying unit (72) to move the pick-up roller to one among at least two pickup positions, wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper. As mentioned above in the rejection of claim 1, the first pickup position is preset, based upon the sum of thicknesses of the sheets up to the top surface of the uppermost sheet in the stack. At some point, the pickup roller (58) will be moved upward. When the next sheet in the stack is to be fed, the pickup roller (58) will be moved downward to a second pickup position that is lower than the first pickup position, e.g., lower by the thickness of the previously fed sheet. In other words, this second pickup position is also preset in accordance with the sum of

thicknesses of sheets remaining in the stack. As such, the Gustafson et al. apparatus has first and second pickup positions that are pre-set in accordance with characteristics of the sheets of paper.

Regarding claim 12, Figs. 1-4 show a paper pick-up device of an image forming apparatus into which papers arranged in a stack are fed, including a friction resistance plate (34) inclined by a predetermined angle to come into contact with a leading end of the topmost paper in the stack to separate the topmost paper from other papers in the stack, including

a pickup roller (58) to convey the topmost paper toward the friction resistance plate (34);

a pickup bracket (38) to rotationally support the pickup roller (58) at a first end of the pickup bracket (38); and

a pickup position varying unit (72) to move the pickup roller (58) to pickup positions, wherein the pickup positions are pre-set in accordance with characteristics of the papers in the stack. Again, as mentioned above in rejection of claim 1, the first pickup position is preset, based upon the sum of thicknesses of the sheets up to the top surface of the uppermost sheet in the stack. At some point, the pickup roller (58) will be moved upward. When the next sheet in the stack is to be fed, the pickup roller (58) will be moved downward to a second pickup position that is lower than the first pickup position, e.g., lower by the thickness of the previously fed sheet. In other words, this second pickup position is also preset in accordance with the sum of thicknesses of

sheets remaining in the stack. As such, the Gustafson et al. apparatus has pickup positions that are pre-set in accordance with characteristics of the sheets of paper.

Regarding claim 13, Fig. 1 shows a paper feeding cassette (24) in which the papers arranged in the stack are placed and from which the paper is fed to the image forming apparatus.

Regarding claim 14, Figs. 1 and 4 show that the pickup roller (58) rotates in contact with the topmost paper arranged in the stack in the paper feed cassette (24).

Regarding claim 15, column 4, lines 1-15 discloses a pickup driving source to generate a driving force.

Regarding claim 16, Figs. 2-4 show a gear train (including 54a-d) inside the pickup bracket (38) to transmit a rotational driving force to the pickup roller (58) wherein the gear train (including 54a-d) has a rotational driving shaft (40) penetrating through the pickup bracket (38) at a second end of the pickup bracket opposite the first end of the pickup bracket (38);

a pickup gear (48) mounted on the rotational driving shaft (40) to transmit the driving force to the rotational driving shaft (40); and

a plurality of gears (including 54a-d) to transmit the driving force from the rotational driving shaft (40) to the pickup roller (58).

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Regarding claim 18, Fig. 4 shows that the pickup position varying unit (72) has a rotary member (50) at the pickup bracket (38) to rotate about an axis to a predetermined angle;

a driving unit (Fig. 4) to drive the rotary member (50) to move between the pickup positions; and

a control unit to detect characteristics of the papers arranged in the stack and control the driving unit (Fig. 4) based on the detected characteristics of the papers.

See, for example, column 6, line 59 to column 7, line 25.

Regarding claim 19, Fig. 4 shows that the rotary member (50) has the pickup roller (58), on a side of the rotary member (50), to rotate and thereby pickup the paper (i.e., the pickup roller is located on the left-hand side of the rotary member (50) in Fig. 4 and the pickup roller picks up the paper); and

a pickup roller shaft (40), coaxial with the rotary member (50), to transmit rotational force to the pickup roller (58).

Regarding claim 27, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including a friction resistance plate (34) inclined by a predetermined angle to come into contact with a leading end of a topmost paper arranged in a stack of papers to separate the topmost paper from other papers, having

a pickup roller (58) to convey the topmost paper toward the friction resistance plate (34);

a pickup frame (near 92);

a pickup bracket (38), movably disposed in the pickup frame (near 92), at an end of which the pickup roller (58) is rotatably disposed; and

a pickup position varying unit (72) to move the pickup roller (58) to pickup positions, wherein the pickup positions are pre-set in accordance with characteristics of the papers in the stack of papers. Once again, as mentioned above in the rejection of claim 1, the first pickup position is preset, based upon the sum of thicknesses of the sheets up to the top surface of the uppermost sheet in the stack. At some point, the pickup roller (58) will be moved upward. When the next sheet in the stack is to be fed, the pickup roller (58) will be moved downward to a second pickup position that is lower than the first pickup position, e.g., lower by the thickness of the previously fed sheet. In other words, this second pickup position is also preset in accordance with the sum of thicknesses of sheets remaining in the stack. As such, the Gustafson et al. apparatus has pickup positions pre-set in accordance with characteristics of the sheets of paper.

Regarding claim 28, Fig. 1 shows a paper feeding cassette (24) in which paper is stacked and from which paper is fed to the image forming apparatus.

Regarding claim 29, Fig. 1 shows a cassette mounting portion (near 36), provided in a body of the image forming apparatus, in which the paper feeding cassette (24) is mounted.

Regarding claim 36, Figs. 1-4 show a device, having

a paper feeding cassette (24) including a plurality of paper sheets arranged in a stack, the paper feeding cassette (24) having a friction resistance plate (34), inclined by a predetermined angle to come into contact with a leading end of the topmost paper sheet in the stack, to separate the paper sheets one by one;

a pick-up roller (58) to rotate in contact with the topmost paper sheet of the paper feeding cassette (24) to convey the topmost paper sheet toward the friction resistance plate (34);

a pick-up bracket (38) to rotationally support the pick-up roller (58), and having a gear train (including 54a-d) to transmit a rotational driving force to the pick-up roller (58);
and

a pick-up position varying unit (72) to move the pick-up roller (58) to one position among at least two pick-up positions, wherein the pick-up positions are pre-set in accordance with characteristics of the paper sheets. Once again, as mentioned above in the rejection of claim 1, the first pickup position is preset, based upon the sum of thicknesses of the sheets up to the top surface of the uppermost sheet in the stack. At some point, the pickup roller (58) will be moved upward. When the next sheet in the stack is to be fed, the pickup roller (58) will be moved downward to a second pickup position that is lower than the first pickup position, e.g., lower by the thickness of the previously fed sheet. In other words, this second pickup position is also preset in accordance with the sum of thicknesses of sheets remaining in the stack. As such, the

Gustafson et al. apparatus has pickup positions pre-set in accordance with characteristics of the sheets of paper.

6. Claims 1-3, 7-9, 12-17, 27-28, 30, 36 and 37, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Publication No. 57-27838.

Regarding claim 1, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including

a paper feeding cassette (Figs. 1 and 3) including a plurality of sheets of paper arranged in a stack, the paper feeding cassette having a friction resistance plate (3), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the sheets of paper one by one;

a pick-up roller (2) to rotate in contact with a topmost sheet of paper of the paper feeding cassette (Figs. 1 and 3) to convey the topmost paper toward the friction resistance plate (3);

a pick-up bracket (6) to rotationally support the pick-up roller (2), and having a gear train (including 18, 19) to transmit a rotational driving force to the pick-up roller (2); and

a pick-up position varying unit (including 14-16) to move the pick-up roller (2) to one position among at least two pick-up positions (Fig. 2), wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper. See English Abstract. Regarding the friction resistance plate (3) limitation, it is noted that Fig. 1

shows that the substantially vertical portion of the resistance plate (3) is inclined at predetermined angle relative to a horizontal plane. Also, such substantially vertical portion of the resistance plate (3) comes into contact with a leading end of the paper sheets, to separate the paper sheets one by one, as required by claim 1.

Regarding claim 2, as best understood, Figs. 1-2 show that the at least two pick-up positions include a first pick-up position where a distance (d1) between the friction resistance plate (3) and the pick-up roller (2) is set to a first distance to allow the pick-up roller to pick-up a sheet of paper having a high strength, and a second pick-up position where the distance (d2) is set to a second distance, shorter than the first distance (d1), to allow the pick-up roller (2) to pick-up a sheet of paper of having a low strength.

The rejection of claim 3 uses reference numerals for the pick-up bracket and the pick-up position varying unit that are different from those used above in the rejection of claim 1. To avoid any confusion, the entire claim 3 including all of the limitations of claims 1 and 2, is included below in the rejection of claim 3.

Regarding claim 3, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including

a paper feeding cassette (Figs. 1 and 3) including a plurality of sheets of paper arranged in a stack, the paper feeding cassette having a friction resistance plate (3), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the sheets of paper one by one;

a pick-up roller (2) to rotate in contact with a topmost sheet of paper of the paper feeding cassette (Figs. 1 and 3) to convey the topmost paper toward the friction resistance plate (3);

a pick-up bracket (5) to rotationally support the pick-up roller (2)(i.e., Fig. 2 shows that the pick-up bracket 5 supports both element 6 and pick-up roller 2, such that pick-up roller 2 can rotate relative to pick-up bracket 5). The pick-up bracket (5) has a gear train (including 21, 22) to transmit a rotational driving force to the pick-up roller (2).

Also, there is a pick-up position varying unit (including 6 and 14-16) to move the pick-up roller (2) to one position among at least two pick-up positions (Fig. 2), wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper. See English Abstract. Regarding the friction resistance plate (3) limitation, it is noted that Fig. 1 shows that the substantially vertical portion of the resistance plate (3) is inclined at predetermined angle relative to a horizontal plane. Also, such substantially vertical portion of the resistance plate (3) comes into contact with a leading end of the paper sheets, to separate the paper sheets one by one.

Moreover, Figs. 1-2 show that the at least two pick-up positions include a first pick-up position where a distance (d_1) between the friction resistance plate (3) and the pick-up roller (2) is set to a first distance to allow the pick-up roller to pick-up a sheet of paper having a high strength, and a second pick-up position where the distance (d_2) is set to a second distance, shorter than the first distance (d_1), to allow the pick-up roller (2) to pick-up a sheet of paper of having a low strength.

In addition, Figs. 3-6 show that the pick-up position varying unit (including 6 and 14-16) comprises a rotary member (6) connected to the pick-up bracket (5) by a shaft (4) to rotate about the shaft (4), the rotary member (6) having the pickup roller (2) rotatably disposed on an end thereof;

a driving unit (including 15) to rotationally drive the rotary member (6) to move the pick-up roller (2) between the at least two pick-up positions; and

a control unit (Fig. 6) to detect the paper characteristics and controlling the driving unit (15) based on the detected paper characteristics.

Regarding claim 7, Figs. 1-4 show a paper pick-up device of an image forming apparatus, having

a paper feeding cassette (Figs. 1 and 3) including a plurality of sheets of paper, the paper feeding cassette having a friction resistance plate (3), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the sheets of paper one by one;

a pick-up roller (2) to rotate in contact with a topmost paper of the paper feeding cassette (Figs. 1 and 3) to convey the topmost paper toward the friction resistance plate (3);

a pick-up frame (5) disposed in the paper feeding cassette (Fig. 2);

a pick-up bracket (6) movably disposed in the pick-up frame (5), on an end of which the pick-up roller (2) is rotatably disposed, and inside of which a gear train

(including 18 and 19) is provided to transmit a rotational driving force to the pick-up roller (2); and

a pick-up position varying unit (including 14-16) to move the pick-up roller (2) to one among at least two pickup positions (Figs. 1 and 2), wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper. See English Abstract. Regarding the friction resistance plate (3) limitation, it is noted that Fig. 1 shows that the substantially vertical portion of the resistance plate (3) is inclined at predetermined angle relative to a horizontal plane. Also, such substantially vertical portion of the resistance plate (3) comes into contact with a leading end of the paper sheets, to separate the paper sheets one by one, as required by claim 7.

Regarding claim 8, as best understood, Figs. 1 and 2 show that the two pick-up positions include a first pick-up position where a distance (d_1) between the friction resistance plate (3) and the pick-up roller (2) is set to a first distance to allow the pick-up roller (2) to pick-up a sheet of paper having high strength; and a second pick-up position where the distance (d_2) is set to a second distance to allow the pick-up roller (2) to pick-up a sheet of paper having a low strength.

Regarding claim 9, Fig. 3 shows that the pick-up position varying unit has

a conveyance frame (14) reciprocally disposed in the pick-up frame (near 5) to support a fixed end of the pick-up bracket (6);

a conveyance unit (15) to linearly reciprocate the conveyance frame (14); and

a control unit to detect the paper characteristics and controlling the conveyance unit based on the detected paper characteristics. See English Abstract. Inherently, there is a control unit to detect and control element 15.

Regarding claim 12, Figs. 1-4 show a paper pick-up device of an image forming apparatus into which papers arranged in a stack are fed, including a friction resistance plate (3) inclined by a predetermined angle to come into contact with a leading end of the topmost paper in the stack to separate the topmost paper from other papers in the stack, including

a pickup roller (2) to convey the topmost paper toward the friction resistance plate (3);

a pickup bracket (6) to rotationally support the pickup roller (2) at a first end of the pickup bracket (6); and

a pickup position varying unit (including 14-16) to move the pickup roller (2) to pickup positions, wherein the pickup positions are pre-set in accordance with characteristics of the papers in the stack. See English Abstract.

Regarding claim 13, Figs. 1 and 3 show a paper feeding cassette in which the papers arranged in the stack are placed and from which the paper is fed to the image forming apparatus.

Regarding claim 14, Figs. 1-3 show that the pickup roller (2) rotates in contact with the topmost paper arranged in the stack in the paper feed cassette.

Regarding claim 15, Figs. 3-4 show a pickup driving source (12) to generate a driving force.

Regarding claim 16, Fig. 4 shows a gear train (including 18 and 19) inside the pickup bracket (6) to transmit a rotational driving force to the pickup roller (2) wherein the gear train (including 18 and 19) has a rotational driving shaft (7) penetrating through the pickup bracket (6) at a second end of the pickup bracket opposite the first end of the pickup bracket (6);

a pickup gear (11) mounted on the rotational driving shaft (7) to transmit the driving force to the rotational driving shaft (7); and

a plurality of gears (including 18 and 19) to transmit the driving force from the rotational driving shaft (7) to the pickup roller (2).

Regarding claim 17, as best understood, Figs. 1-3 show that the pickup position varying unit (including 14-16) moves the pickup roller (2) to one of at least two positions including a first position at a first distance (d1) from the friction resistance plate (3) to pickup the topmost paper when the topmost paper is a thick paper, and

a second position at a second distance (d2) from the friction resistance plate (3), the second distance (d2) being shorter than the first distance (d1), to pick up the topmost paper when the topmost paper is a thin paper.

Regarding claim 27, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including a friction resistance plate (3) inclined by a predetermined angle to

come into contact with a leading end of a topmost paper arranged in a stack of papers to separate the topmost paper from other papers, having

a pickup roller (2) to convey the topmost paper toward the friction resistance plate (3);

a pickup frame (5);

a pickup bracket (6), movably disposed in the pickup frame (5), at an end of which the pickup roller (2) is rotatably disposed; and

a pickup position varying unit (including 14-16) to move the pickup roller (2) to pickup positions, wherein the pickup positions are preset in accordance with characteristics of the papers in the stack of papers. See English Abstract. Regarding the friction resistance plate (3) limitation, it is noted that Fig. 1 shows that the substantially vertical portion of the resistance plate (3) is inclined at predetermined angle relative to a horizontal plane. Also, such substantially vertical portion of the resistance plate (3) comes into contact with a leading end of the paper sheets, to separate the paper sheets one by one, as required by claim 27.

Regarding claim 28, Figs. 1 and 3 show a paper feeding cassette in which paper is stacked and from which paper is fed to the image forming apparatus.

Regarding claim 30, as best understood, Figs. 1-3 show that the pickup position varying unit (including 14-16) moves the pickup roller (2) to one of at least two positions including a first position at a first distance (d_1) from the friction resistance plate (3) to

pickup the topmost paper, the topmost paper being a thick paper, and a second position at a second distance (d2) from the friction resistance plate (3), the second distance (d2) being shorter than the first distance (d1), to pick up the topmost paper, the topmost paper being a thin paper.

Regarding claim 36, Figs. 1-4 show a device, having

a paper feeding cassette (Figs. 1 and 3) including a plurality of paper sheets arranged in a stack, the paper feeding cassette having a friction resistance plate (3), inclined by a predetermined angle to come into contact with a leading end of the topmost paper sheet in the stack, to separate the paper sheets one by one;

a pick-up roller (2) to rotate in contact with the topmost paper sheet of the paper feeding cassette to convey the topmost paper sheet toward the friction resistance plate (3);

a pick-up bracket (6) to rotationally support the pick-up roller (2), and having a gear train (including 18 and 19) to transmit a rotational driving force to the pick-up roller (2); and

a pick-up position varying unit (including 14-16) to move the pick-up roller (2) to one position among at least two pick-up positions, wherein the pick-up positions are pre-set in accordance with the characteristics of the paper sheets. See English Abstract. Regarding the friction resistance plate (3) limitation, it is noted that Fig. 1 shows that the substantially vertical portion of the resistance plate (3) is inclined at predetermined angle relative to a horizontal plane. Also, such substantially vertical

portion of the resistance plate (3) comes into contact with a leading end of the paper sheets, to separate the paper sheets one by one, as required by claim 36.

Regarding claim 37, Figs. 1-4 show a paper pick-up device of an image forming apparatus, including

a paper feeding cassette (Figs. 1 and 3) including a plurality of sheets of paper arranged in a stack, the paper feeding cassette (Figs. 1 and 3) having a friction resistance plate (3), inclined by a predetermined angle to come into contact with a leading end of the sheets of paper, to separate the sheets of paper one by one;

a pick-up roller (2) to rotate in contact with a topmost sheet of paper of the paper feeding cassette (Figs. 1 and 3) to convey the topmost paper toward the friction resistance plate (3);

a pick-up bracket (5) to rotationally support the pick-up roller (2), and having a gear train (21, 22) to transmit a rotational driving force to the pick-up roller (2); and

a pick-up position varying unit (including 6 and 14-16) to move the pick-up roller (2) to one position among at least two pick-up positions (Figs. 1-2),

wherein the pick-up positions are pre-set in accordance with characteristics of the sheets of paper (see English Abstract),

the at least two pick-up positions (Figs. 1-2) comprise: a first pick-up position where a distance between the friction resistance plate (3) and the pick-up roller (2) is set to a first distance (d_1) to allow the pick-up roller (2) to pick-up a sheet of paper

having a first thickness, and a second pick-up position where the distance is set to a second distance (d2), shorter than the first distance (d1), to allow the pick-up roller (2) to pick-up a sheet of paper having a second thickness, the second thickness being less than the first thickness, and

the pick-up position varying unit (including 6 and 14-16) comprises:

a rotary member (6) connected to the pick-up bracket by a shaft (4) to rotate about the shaft, the rotary member (6) having the pick-up roller (2) rotatably disposed on an end thereof;

a driving unit (including 15) to rotationally drive the rotary member (6) to move the pick-up roller (2) between the at least two pick-up positions (Figs. 1-2); and

a control unit (Fig. 6) to detect paper characteristics and controlling the driving unit (including 15) based on the detected paper characteristics.

Response to Arguments

7. Applicant's arguments filed January 19, 2006 have been fully considered but they are not persuasive. With regard to the rejections of claims 2, 8, 17 and 30 under 35 U.S.C. 112, second paragraph, applicant first argues that high strength and low strength are defined in numbered paragraphs [0039] and [0040] of the specification. Then, for claims 17 and 30 applicant argues that the terms thick paper and thin paper should be clear to those skilled in the art.

In response, it is noted that none of the cited numbered paragraphs of the specification appear to define any specific thickness values or thickness ranges for "a

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thick sheet” or “a thin sheet”. Thus, it is unclear what constitutes a “thin sheet” or a “thick sheet”.

With regard to the rejection of claims 1-10 and 36 in view of U.S. Patent No. 6,382,619 (Gustafson et al.), applicant argues that “Although the pick mechanism actuation system 72 of Gustafson does move the pick roller 58 (corresponding to the pick-up roller of claims 1, 7 and 36) upward or downward according to the amount of paper in the stack, the pick roller 58 is always positioned at the same relative location on the piece of paper. Hence, Gustafson only provides one pick-up position. The present invention, as recited in claims 1, 7 and 36, provides at least two pick-up positions.”

In response, it is noted that independent claims 1, 7 and 36 require a pickup position varying unit to move the pickup roller to **one position** among at least two pickup positions. Thus, the claims really only require one position. In any event, these claims also do not specify where the two pick-up positions are located. Thus, it is the examiner’s position that two different vertical pick-up positions meet the requirements of these claims, as explained above in the rejections of claims 1, 7 and 36.

With regard to independent claims 12 and 27, applicant argues that, “Gustafson discloses a pick mechanism actuation system that only operates to pickup paper at a single pickup position.” Again, only one position is required, and it is the examiner’s position that two different vertical pick-up positions also meet the requirements.

With regard to the rejections of claims 1, 2, 7-9 and 36 in view of Japanese Publication No. 57-27838, applicant argues that independent claims 1, 7 and 36 recite a

friction resistance plate, inclined by a predetermined angle to come into contact with a leading end of the paper sheet, to separate the paper sheets one by one. Then, applicant basically argues that element 3 of Japanese Publication No. 57-27838 is not inclined at a predetermined angle to separate sheets one by one.

In response, it is noted that the dictionary defines the word "inclined" as "1: having inclination, disposition, or tendency 2 a: having a leaning or slope **b: making an angle with a line or plane.**" (emphasis added). See Merriam Webster's Collegiate Dictionary, 10th Ed., at 588. With this meaning of inclined, it is the examiner's position that the vertical portion of element 3 is inclined relative to a horizontal plane (e.g., a horizontal plane passing through the cassette in Fig. 1 of Japanese Publication No. 57-27838).

With regard to independent claims 12-17, 21, 27, 28 and 30, applicant basically argues that element 3 of Japanese Publication No. 57-27838 is not inclined at a predetermined angle. As mentioned above, the vertical portion of element 3 is inclined relative to a horizontal plane (e.g., a horizontal plane passing through the cassette in Fig. 1 of Japanese Publication No. 57-27838).

Allowable Subject Matter

8. Claims 4-6, 31-33 and 35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 10 and 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Morrison whose telephone number is (571) 272-7221. The examiner can normally be reached on M-F, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Matecki can be reached on (571) 272-6951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

04/18/2006



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